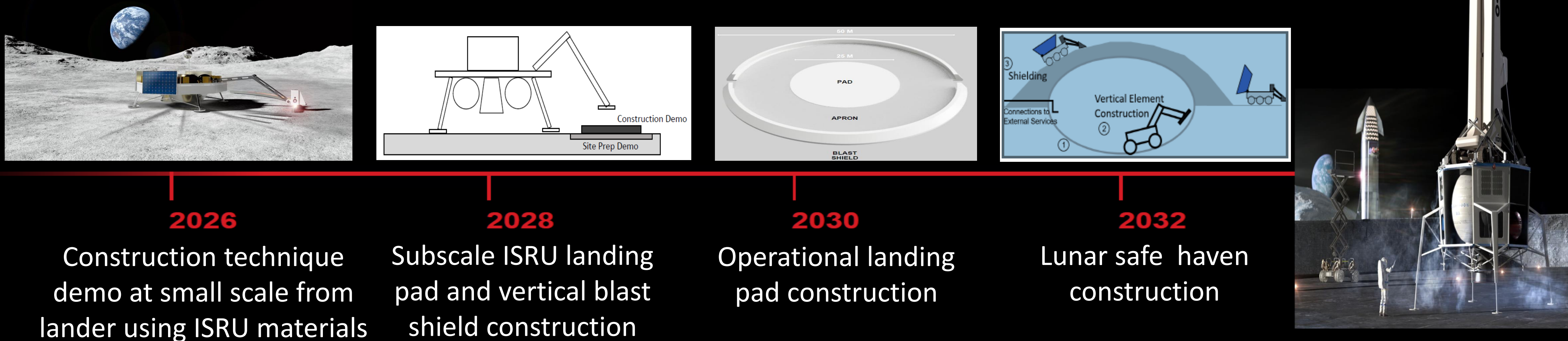


MIMPACT

Moon-to-Mars Planetary Autonomous Construction Technology

Develop and demonstrate capabilities to protect astronauts and create infrastructure on the lunar surface using lunar regolith-based materials

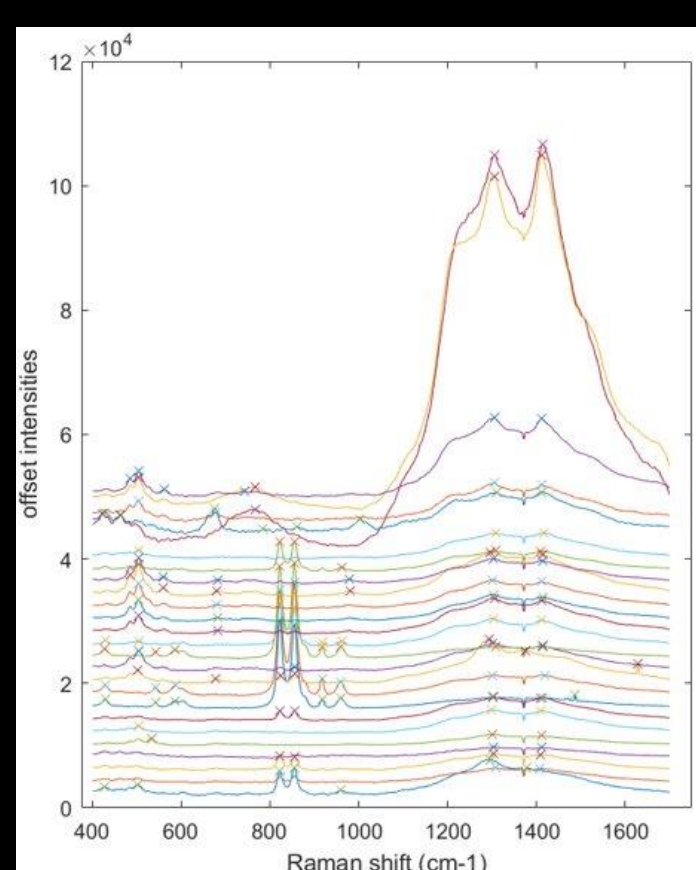
MIMPACT Construction and Excavation Roadmap



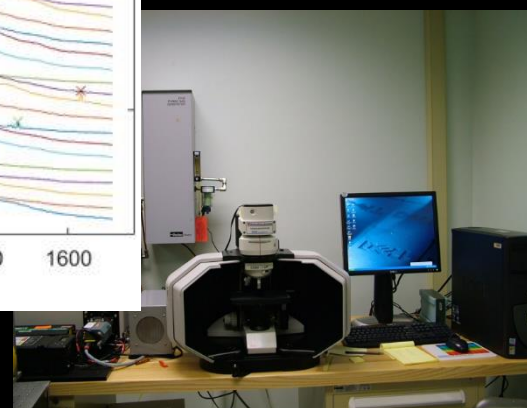
LaRC Contribution to MIMPACT (MSFC – lead center)

Nondestructive Evaluation

- Key to successful use of new materials and structures in space environments
- Measure and analyze material properties
- Inspect infrastructure for safety
- Inform ISRU technology choice as a function of regolith properties

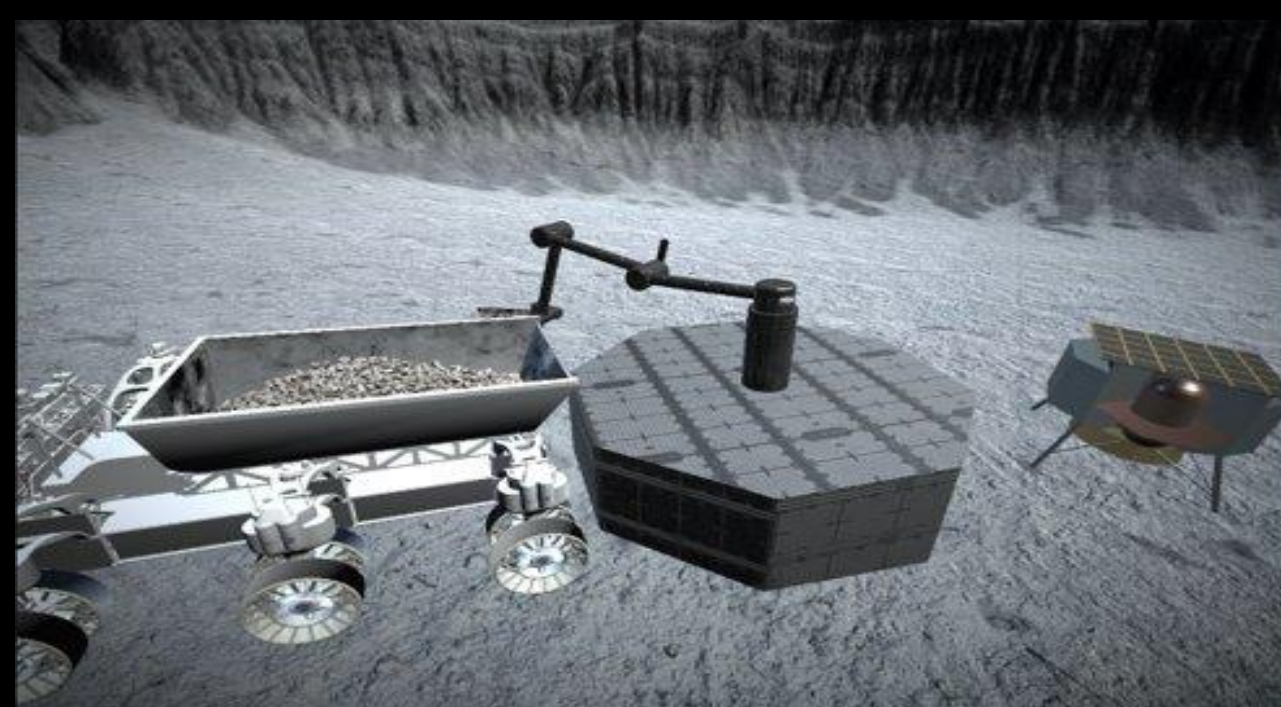


Identifying regolith components via Raman spectroscopy



Autonomy

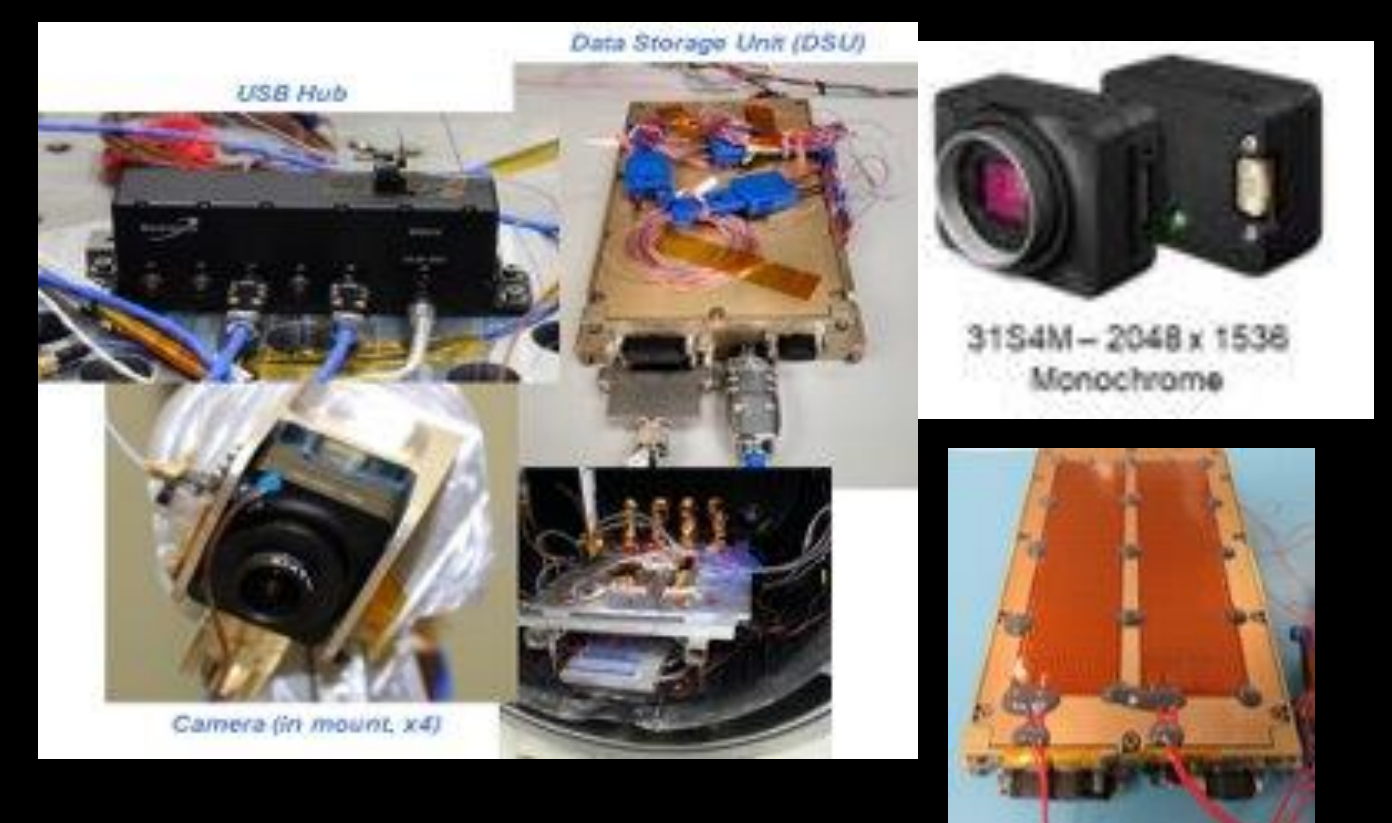
- The backbone of persistent lunar and planetary operations
- Simulation-to-flight platform for human-AI teaming during development, testing and operation
- Fully autonomous systems where communication delays require software self-control



Building simulation analog of physical components for development, testing and future operations

Instrumentation

- Key to comprehensive situational awareness of the environment
- Assess sensor requirements
- Determine practicality of sensor use in lunar conditions, including radiation, vacuum, and reduced gravity



Sample of instruments under investigation

Team

